CALIFORNIA ENERGY COMMISSION

Acceptance Testing and the 2013 Energy Standards

Christopher Olvera
California Energy Commission
Outreach and Education Unit

ICC Orange Empire Chapter Meeting
Tustin, CA
March 19, 2015

A Little CEC History

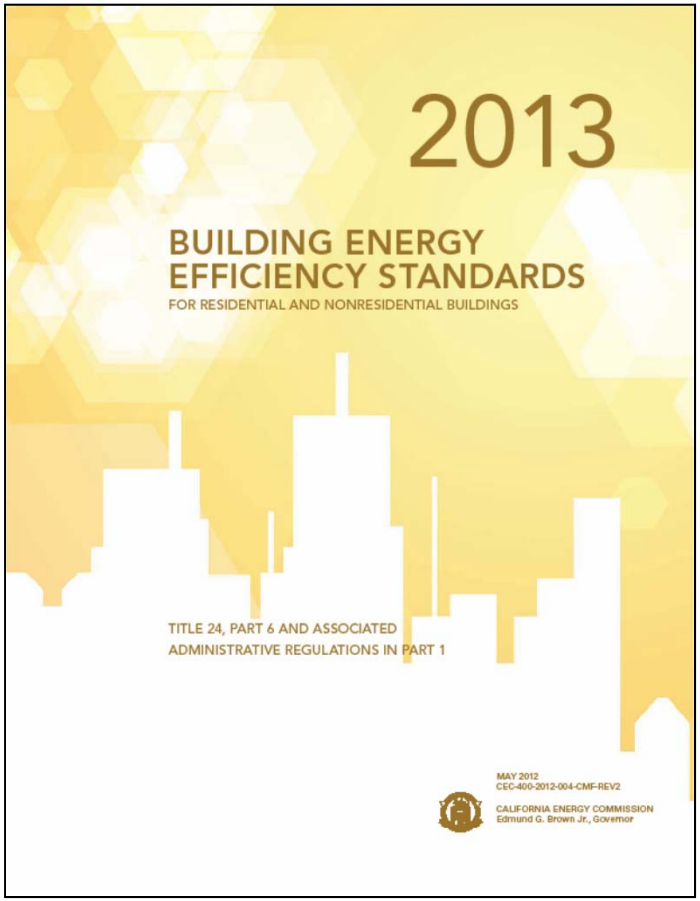
- Section 25402 of the Public Resources Code (known as the **Warren Alquist Act**)
- The act created the Energy Commission in 1974 and gave it authority to develop and maintain Building Energy Efficiency Standards
- Requires the Standards and new requirements to be cost effective over the economic life of the structure
- Requires the Energy Commission to update the Standards periodically (about every 3 years)

CALIFORNIA ENERGY COMMISSION

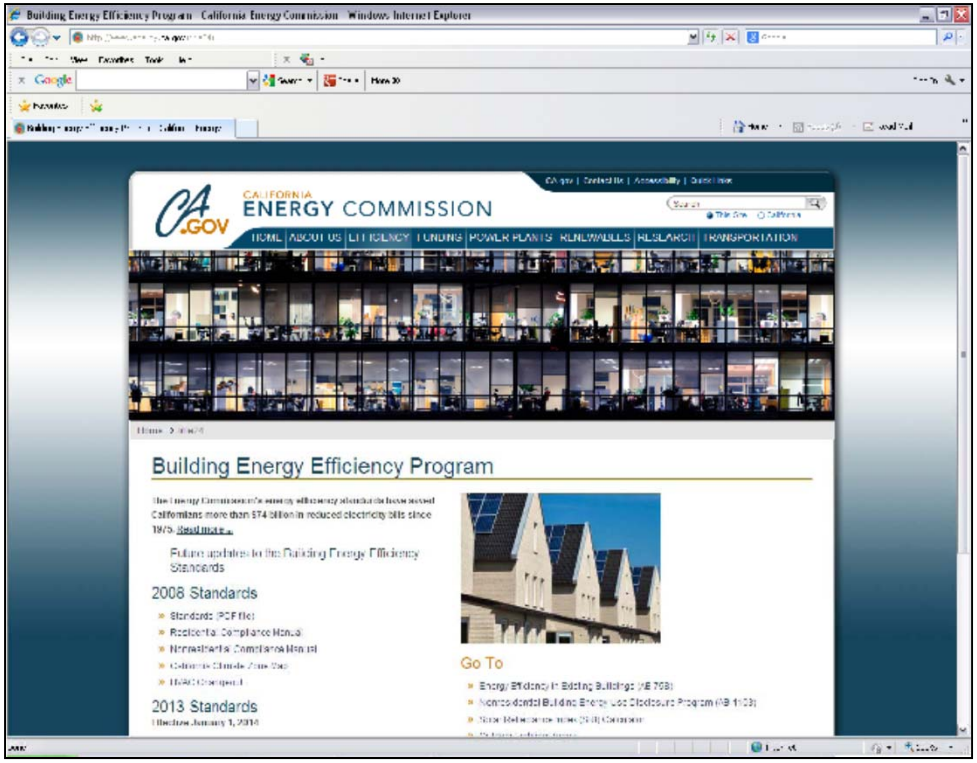
Let's discuss the 2013 Building Energy Efficiency Standards

2013 Building Energy Efficiency Standards

- **Effective on July 1, 2014**
  - Building permit applications submitted on or after this date
- **Larger projects in plan review may be affected:**
  - Need to resubmit if permits pulled on/after effective date



2013 Documents



- Building Energy Efficiency Standards
- Nonresidential Compliance Manual
- Reference Appendices
- All docs. available online at:

  www.energy.ca.gov/title24

What the future holds

- AB 32 – Reduce carbon footprint
- CPUC/CEC Strategic Plan:
  - Net-zero energy use for residential buildings by 2020
  - Net-zero energy use for nonresidential buildings by 2030
- Energy Standards will "evolve/expand" and become more stringent to reach these goals

Let's talk about Acceptance Testing

What is acceptance testing?

- Introduced in the 2005 Energy Standards
- Tests performed to ensure that equipment, systems and controls operate as required by the Standards
  - Visual inspection
  - Certification requirements
  - Functional testing

When is acceptance testing required?

- **All tests are mandatory requirements**
- **Specified on NRCC at permit, results reported on NRCA at Final Inspection**
- **Apply to newly installed and retrofit:**
  - HVAC systems and controls
  - Indoor/Outdoor lighting systems and controls
  - Site-built fenestration
  - Covered Processes

Who can perform acceptance testing?

- **Conducted by field technician:**
  - Builder/contractor
  - Engineer
  - Commissioning agent
  - NOTE: License not required
- **For 2013 Standards, certification by ATTCP required for:**
  - HVAC systems and controls
  - Indoor/Outdoor lighting systems and controls

Who/What is an ATTCP?

- **Acceptance Test Technician Certification Provider (ATTCP) §10-103-A and §10-103-B**
- **Responsible for training, certifying, and overseeing**:
  - Field technicians (acceptance test technician)
  - Employers (contractor)
  - HVAC and indoor/outdoor lighting only
- **Certification required when industry thresholds are satisfied**

Have any ATTCPs been approved?

- **Mechanical ATTCPs**
  - NEMIC (replaced TABB)
  - NEBB (interim approved)
- **Lighting ATTCPs**
  - CALCTP
  - NLCAA
- **More information at:**
  - http://www.energy.ca.gov/title24/attcp/

Have the industry thresholds been met?

- **<u>No</u> for Mechanical ATTCPs**
  - This means the builder, contractor, commissioning agent, etc. can perform testing at this time
  - No certification required
  - NEMIC and NEBB in the process of statisfying thresholds
- **<u>YES</u> for Lighting ATTCPs**
  - Field technician and employers performing acceptance testing must be certified by CALCTP or NLCAA <u>now</u>

Let's discuss the Mechanical Acceptance Testing requirements

MECH Acceptance Testing

2008 – §125

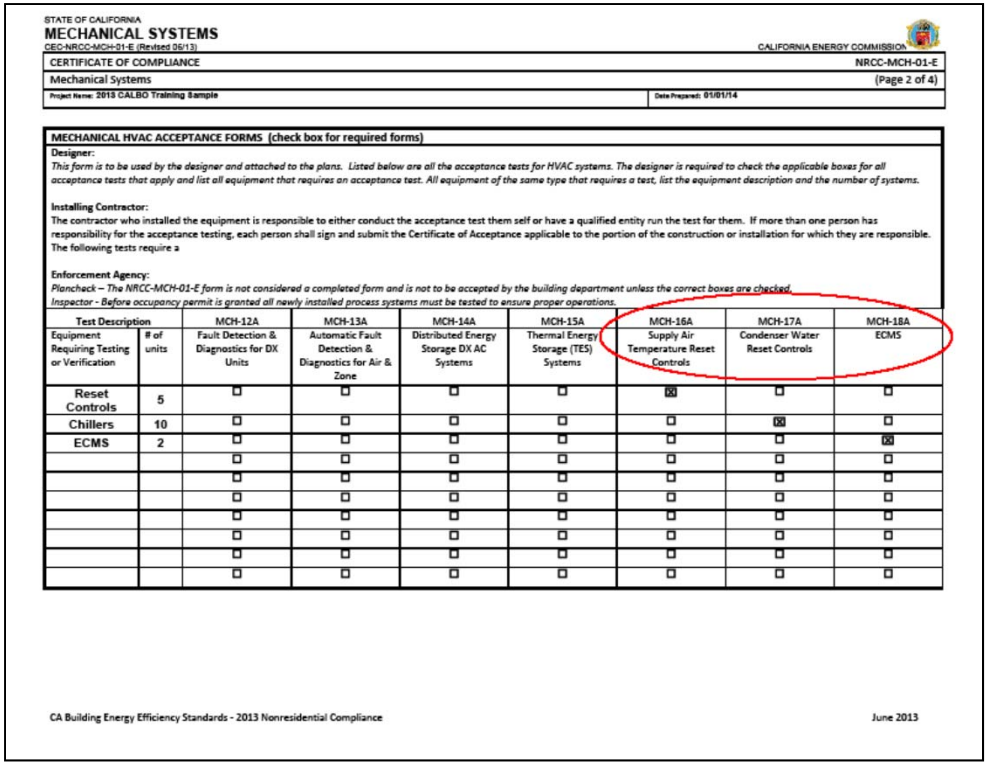
- Testing mandatory if equip. installed for:
  - Outdoor air ventilation
  - Air economizers
  - Demand controls vent.
  - Supply fan variable flow cont.
  - Thermal energy storage
- Indentified as "MECH-A"

2013 – *§120.5*

- New tests added for:
  - Supply air temp. reset cont.
  - Water cooled chillers w/condenser reset controls
  - EMCS
- Identified as "NRCA-MCH"
- Must be performed by Certified Mechanical Acceptance Test Technician (CMATT)

§120.5 and the Plans Examiner

- **Verify required Acceptance Tests on NRCC-MCH-01**
  - NRCA-MCH-16A (supply air reset)
  - NRCA-MCH-17A (chiller condenser reset)
  - NRCA-MCH-18A (ECMS)
- **Form must be incorporated onto plans**



STATE OF CALIFORNIA
MECHANICAL SYSTEMS
CEC-NRCC-MCH-01-E (Revised 06/13)
CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	(Page 2 of 4)
Project Name: 2013 CALBO Training Sample	Date Prepared: 01/01/14

MECHANICAL HVAC ACCEPTANCE FORMS (check box for required forms)

Designer:
This form is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for HVAC systems. The designer is required to check the applicable boxes for all acceptance tests that apply and list all equipment that requires an acceptance test. All equipment of the same type that requires a test, list the equipment description and the number of systems.

Installing Contractor:
The contractor who installed the equipment is responsible to either conduct the acceptance test them self or have a qualified entity run the test for them. If more than one person has responsibility for the acceptance testing, each person shall sign and submit the Certificate of Acceptance applicable to the portion of the construction or installation for which they are responsible. The following tests require a

Enforcement Agency:
Plancheck – The NRCC-MCH-01-E form is not considered a completed form and is not to be accepted by the building department unless the correct boxes are checked.
Inspector - Before occupancy permit is granted all newly installed process systems must be tested to ensure proper operations.

Test Description		MCH-12A	MCH-13A	MCH-14A	MCH-15A	MCH-16A	MCH-17A	MCH-18A
Equipment Requiring Testing or Verification	# of units	Fault Detection & Diagnostics for DX Units	Automatic Fault Detection & Diagnostics for Air & Zone	Distributed Energy Storage DX AC Systems	Thermal Energy Storage (TES) Systems	Supply Air Temperature Reset Controls	Condenser Water Reset Controls	ECMS
Reset Controls	5	☐	☐	☐	☐	☒	☐	☐
Chillers	10	☐	☐	☐	☐	☐	☒	☐
ECMS	2	☐	☐	☐	☐	☐	☐	☒
		☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐
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		☐	☐	☐	☐	☐	☐	☐

CA Building Energy Efficiency Standards - 2013 Nonresidential Compliance — June 2013

CERTIFICATE OF COMPLIANCE	NRCC-MCH-01-E
Mechanical Systems	(Page 2 of 4)
Project Name: **2013 CALBO Training Sample**	Date Prepared: **01/01/14**

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Reset Controls	**5**	☐	☐	☐	☐	☒	☐	☐
Chillers	**10**	☐	☐	☐	☐	☐	☒	☐
ECMS	**2**	☐	☐	☐	☐	☐	☐	☒
		☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐
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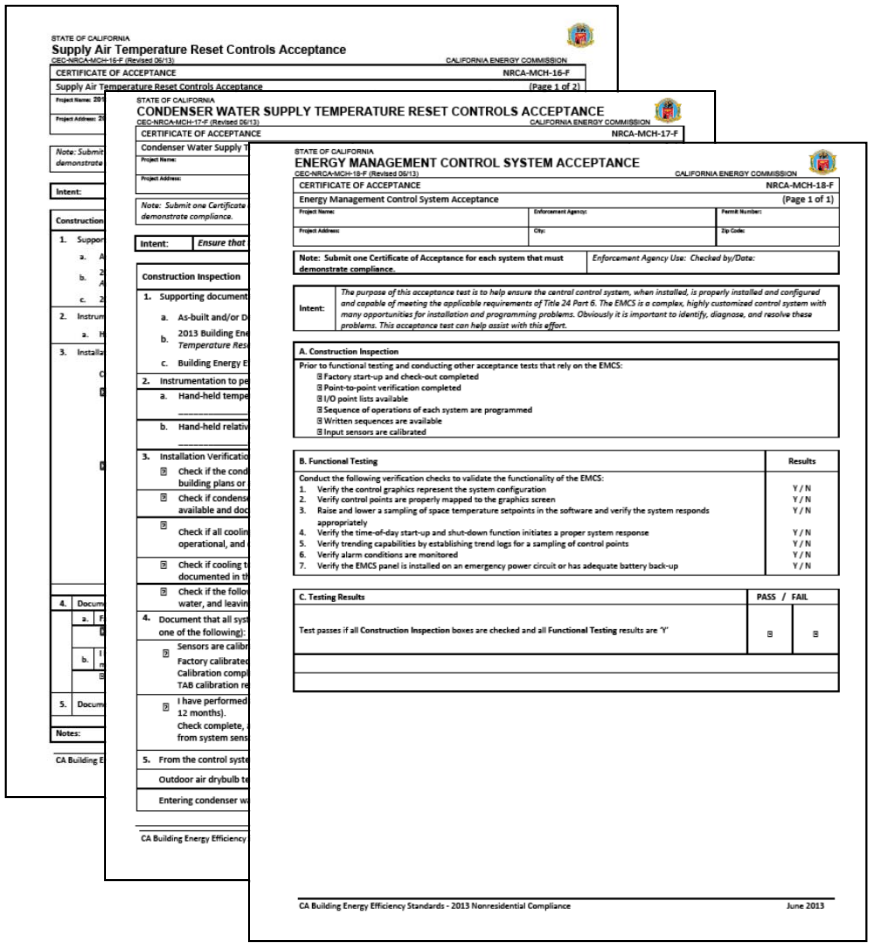
		☐	☐	☐	☐	☐	☐	☐

§120.5 and the Plans Examiner *cont.*

- **All HVAC units/controls and req. acceptance test must be verified on the NRCC-MCH-01 form**
- **Frequently req. test include:**
  - Outdoor air ventilation (NRCA-MCH-02)
  - Single zone unitary A/C and HP controls (NRCA-MCH-03)
  - Duct leakage (NRCA-MCH-04)
  - Economizer controls (NRCA-MCH-05)
  - DCV (NRCA-MCH-06)

§120.5 and the Field Inspector



- **At Final, verify required Acceptance forms**
  - ➢ Refer to NRCC-MCH-01 form
- **Verify Acceptance testing is performed by CMATT when required**
  - ➢ Identify signature in Declaration Statement

STATE OF CALIFORNIA

Supply Air Temperature Reset Controls Acceptance

CEC-NRCA-MCH-16-F (Revised 06/13) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF ACCEPTANCE		NRCA-MCH-16-F
Supply Air Temperature Reset Controls Acceptance		(Page 1 of 2)
Project Name: **2013 CALBO Training Sample**	Enforcement Agency: **Local Jurisdiction**	Permit Number: **010113**
Project Address: **2013 CALBO Drive**	City: **Sacramento**	Zip Code: **95814**

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.	Enforcement Agency Use: Checked by/Date

Intent:	***Verify that the supply air temperature modulates to meet system temperature setpoint(s).***

Construction Inspection

1. Supporting documentation needed to perform test may include, but is not limited to:

a. As-built and/or Design Documents, including Mechanical Equipment Schedules and control schedules.

b. 2013 Building Energy Efficiency Standards Nonresidential Compliance Manual *(NA7.5.15 Supply Air Temperature Reset Controls Acceptance At-A-Glance)*.

c. 2013 Building Energy Efficiency Standards Nonresidential Appendix (Section NA7).

2. Instrumentation to perform test includes, but is not limited to:

a. Hand-held temperature sensor Date of calibration: **01/01/14** (*must be within one year*)

3. Installation:

Check the appropriate box:

☒ The supply air temperature reset controls are installed per the requirements of the 2013 Building Energy Efficiency Standards section 140.4(f): Multi-zone systems shall include controls that automatically reset supply-air temperatures:

(1) In response to representative building loads or to outdoor air temperature; and

(2) By at least 25 percent of the difference between the design supply-air temperature and the design room air temperature.

☒ An exception is taken to this requirement (one of the following must be true; acceptance test is not needed):

Zones served by space-conditioning systems in which at least 75 percent of the energy for reheating, or providing warm air in mixing systems, is provided from a site-recovered or site-solar energy source.

Where supply-air temperature reset would increase overall building energy use.

Zones in which specific humidity levels are required to satisfy exempt process loads. Computer rooms or spaces with only IT equipment are not exempt process loads.

Zones with a peak supply air quantity of 300 cfm or less.

The system has controls to prevent reheat, recool, and simultaneous cooling and heating.

4. Document that all system air temperature sensors are factory or field calibrated or perform field check (check a or b):

a. Factory calibrated, or Field-calibrated by TAB technician, commissioning agent, or other.

☒ Calibration complete, all sensors within 2% of calibrated reference sensor (provide supporting documentation, e.g. a copy of TAB calibration results).

b. I have performed a field check using a calibrated temperature standard (i.e. device that has been calibrated within the last 12 months).

☐ Check complete, all air temperature sensors within 2% of calibrated reference sensor (provide supporting documentation, including results from system air sensors and calibrated reference standard).

5. Document current supply air temperature: **75** °F

Notes:

CERTIFICATE OF ACCEPTANCE		NRCA-MCH-02-A
Outdoor Air Acceptance		(Page 3 of 4)
Project Name: **2013 CALBO Training Sample**	Enforcement Agency: **Local Jurisdiction**	Permit Number: **010114**
Project Address: **2013 CALBO Drive**	City: **Sacramento**	Zip Code: **95814**

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

- I certify that this Certificate of Acceptance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Documentation Author Company Name:	Date Signed:
Address:	CEA/HERS/ATT Certification Identification (If applicable):
City/State/Zip:	Phone:

FIELD TECHNICIAN'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Acceptance is true and correct.
2. I am the person who performed the acceptance verification reported on this Certificate of Acceptance (Field Technician).
3. The construction or installation identified on this Certificate of Acceptance complies with the applicable acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
4. I have confirmed that the Certificate(s) of Installation for the construction or installation identified on this Certificate of Acceptance has been completed and signed by the responsible builder/installer and has been posted or made available with the building permit(s) issued for the building.

Field Technician Name: **MECH Field Tech Guy**	Field Technician Signature: *MECH Field Tech Guy*	
Field Technician Company Name: **MECH Field Test Comp.**	Position with Company (Title): **Owner**	
Address: **345 Test Street**	ATT Certification Identification (if applicable): **NEBB/TABB Cert. #: 01012014**	
City/State/Zip: **Sacramento, CA 95814**	Phone: **(916) 813-2451**	Date Signed: **1/1/2014**

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. I am the Field Technician, or the Field Technician is acting on my behalf as my employee or my agent and I have reviewed the information provided on this Certificate of Acceptance.
2. I am eligible under Division 3 of the Business and Professions Code in the applicable classification to accept responsibility for the system design, construction or installation of features, materials, components, or manufactured devices for the scope of work identified on this Certificate of Acceptance and attest to the declarations in this statement (responsible acceptance person).
3. The information provided on this Certificate of Acceptance substantiates that the construction or installation identified on this Certificate of Acceptance complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
4. I have confirmed that the Certificate(s) of Installation for the construction or installation identified on this Certificate of Acceptance has been completed and is posted or made available with the building permit(s) issued for the building.
5. I will ensure that a completed, signed copy of this Certificate of Acceptance shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a signed copy of this Certificate of Acceptance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Acceptance Person Name:	Responsible Acceptance Person Signature:
Responsible Acceptance Person Company Name:	Position with Company (Title):
Address:	CSLB License:

Supply Air Temperature Reset Controls Acceptance

CERTIFICATE OF ACCEPTANCE		NRCA-MCH-16-F
Supply Air Temperature Reset Controls Acceptance		(Page 2 of 2)
Project Name: **2013 CALBO Training Sample**	Enforcement Agency: **Local Jurisdiction**	Permit Number: **010113**
Project Address: **2013 CALBO Drive**	City: **Sacramento**	Zip Code: **95814**

A. Functional Testing

Check to make sure that chilled / hot water coils, if used, are not already fully open and calling for maximum cooling / heating. If this is the case, reverse Steps 1 and 2 and/or change the set point range as necessary to conduct this test.

Reset control parameter is (circle one): Outside air temperature, Zone or return air temperature, Zones calling for heating or cooling, or Other _____.

Step 1: During occupied mode, adjust the reset control parameter to decrease the supply air temperature (to the lower supply temperature limit).

a.	Supply air temperature controls modulate as intended.	(Y) / N
b.	Actual supply air temperature decreases to meet the new set point within +/- 2°F.	(Y) / N
c.	Supply air temperature stabilizes within 15 minutes.	(Y) / N

Supply air temperature set point: __80__ ° F Actual supply air temperature: __82__ ° F

Step 2: During occupied mode, adjust the reset control parameter to increase the supply air temperature (to the upper supply temperature limit).

a.	Supply air temperature controls modulate as intended.	(Y) / N
b.	Actual supply air temperature increases to meet the new set point within +/- 2°F.	(Y) / N
c.	Supply air temperature stabilizes within 15 minutes.	(Y) / N

Supply air temperature set point: __75__ ° F Actual supply air temperature: __73__ ° F

Step 3: Restore reset control parameter to automatic control.

a.	Supply air temperature controls modulate as intended.	(Y) / N
b.	Actual supply air temperature changes to meet the new set point within +/- 2°F.	(Y) / N
c.	Supply air temperature stabilizes within 15 minutes.	(Y) / N

Supply air temperature set point: __78__ ° F Actual supply air temperature: __76__ ° F

B. Evaluation :

☒ **PASS**: All **Construction Inspection** responses are complete and **Functional Testing Results** are all circled **YES**.

Notes:

Let's talk about the Indoor Lighting Acceptance Testing requirements

Lighting – Multi-Level

2008 – *§131(b)*

- Multi-level lighting controls req. for:
  - Enclosed spaces ≥ 100 ft^2; and
  - Have a lighting load > 0.8 W/ft^2
- One control step between 30% and 70%
- Uniform illuminance with dimmers, A/B switching, etc.

2013 – *§130.1(b)*

- Multi-level lighting controls req. for
  - Enclosed space ≥ 100 ft^2; and
  - Have a lighting load > 0.5 W/ft^2
- Control steps and uniform illuminance dependent on luminaire type
  - In accordance with TABLE 130.1-A

Lighting – Shut-OFF

2008 – *§131(d)*

- Shut-off controls req. for every floor
- Can be achieved with:
  - Occupancy sensors
  - Automatic time-switch
  - Countdown timer switch
  - Etc.

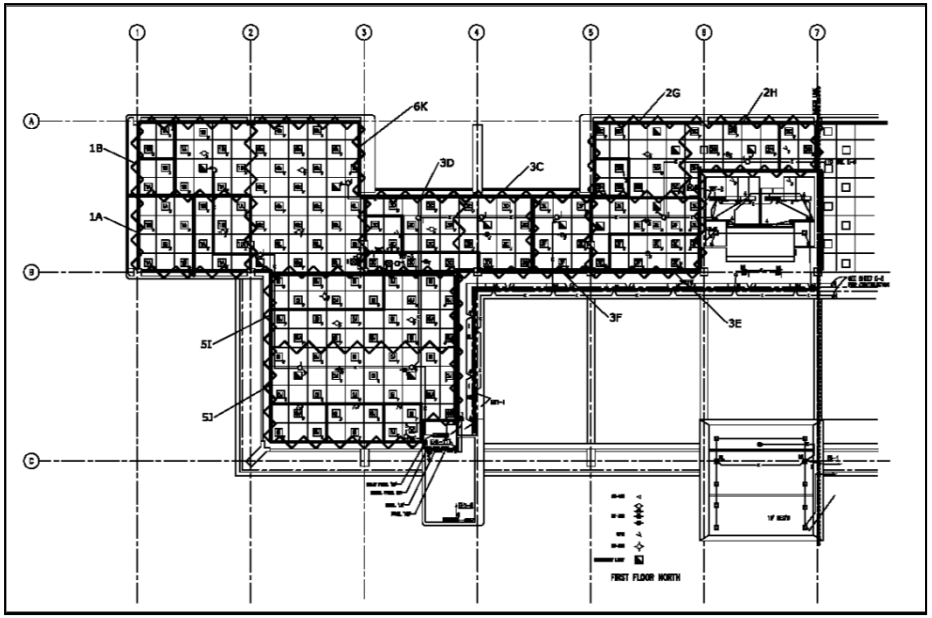
2013 – *§130.1(c)*

- Countdown time switches prohibited (some exceptions)
- Occupant sensors that shut off all lighting req. in specific areas
- Occupant sensors with partial ON/OFF controls req. in specific areas
- Captive key cards req. in hotel/motel guest rooms

Lighting – Acceptance/Installation Cert.

2008 – *§134*	2013 – *§130.4*
• Testing mandatory if controls/systems installed for: ➢ Multi-level controls ➢ Shut-off controls ➢ Daylighting controls ➢ Automatic daylighting controls • Identified as "LTG-A"	• Identified as "NRCA-LTI" ➢ Must be performed by Certified Lighting Controls Acceptance Test Technician (CLCATT) • New Certificate(s) of Installation req. ➢ Identified as "NRCI-LTI" ➢ Completed by installing contractor

§130.1, §130.4 and the Plans Examiner



- **Verify multi-level and shut-OFF controls on electrical plans:**
  - More spaces may req. multi-level controls (> 0.5 W/ft^2)
  - Many spaces will req. occupant sensors
    - All lighting
    - Partial ON/OFF
- **Verify req. Acceptance Tests on NRCC-LTI-01**

5.	Complies ONLY if **Installed** ≤ **Allowed**		Complies ONLY if **Installed** ≤ **Allowed**	
6.	**Allowed** Lighting Power Conditioned NRCC-LTI-03-E, page 1		**Allowed** Lighting Power Unconditioned NRCC-LTI-03-E, page 1	

Declaration of Required Installation Certificates – Declare by selecting yes for all Installation Certificates that will be submitted. (Retain copies and verify forms are completed and signed.)

YES	NO	Form/Title	
☒		NRCI-LTI-01-E - Must be submitted for all buildings	☐ Field Inspector
	☒	NRCI-LTI-02-E - Must be submitted for a lighting control system, or for an Energy Management Control System (EMCS), to be recognized for compliance.	☐ Field Inspector
☒		NRCI-LTI-03-E - Must be submitted for a line-voltage track lighting integral current limiter, or for a supplementary overcurrent protection panel used to energize only line-voltage track lighting, to be recognized for compliance.	☐ Field Inspector
	☒	NRCI-LTI-04-E - Must be submitted for two interlocked systems serving an auditorium, a convention center, a conference room, a multipurpose room, or a theater to be recognized for compliance.	☐ Field Inspector
☒		NRCI-LTI-05-E - Must be submitted for a Power Adjustment Factor (PAF) to be recognized for compliance.	☐ Field Inspector
	☒	NRCI-LTI-06-E - Must be submitted for additional wattage installed in a video conferencing studio to be recognized for compliance.	☐ Field Inspector

Declaration of Required Certificates of Acceptance – Declare by checking all of the Certificates of Acceptance that will be submitted. (Retain copies and verify forms are completed and signed.)

YES	NO	Form/Title	
☒		NRCA-LTI-02-E - Must be submitted for occupancy sensors and automatic time switch controls.	☐ Field Inspector
☒		NRCA-LTI-03-E - Must be submitted for automatic daylight controls.	☐ Field Inspector
	☒	NRCA-LTI-04-E - Must be submitted for demand responsive lighting controls.	☐ Field Inspector

§130.1, §130.4 and the Field Inspector

- **At Final visually verify:**
  - Multi-level lighting controls installed in accordance with TABLE 130.1-A
  - Shut-OFF controls installed to comply with completely OFF, or Partial ON/OFF requirements
- **Verify req. NRCI-LTI forms**
- **Verify req. NRCA-LTI forms**
  - Must be signed my CLCATT

Let's talk about the Covered Processes Acceptance Testing requirements

Covered Processes

2008 – *§126*

- Requirements for refrigerated warehouses ≥ 3,000 ft^2:
  - Insulation (walls, roof, etc.)
  - Evaporators
  - Condensers
  - Compressors

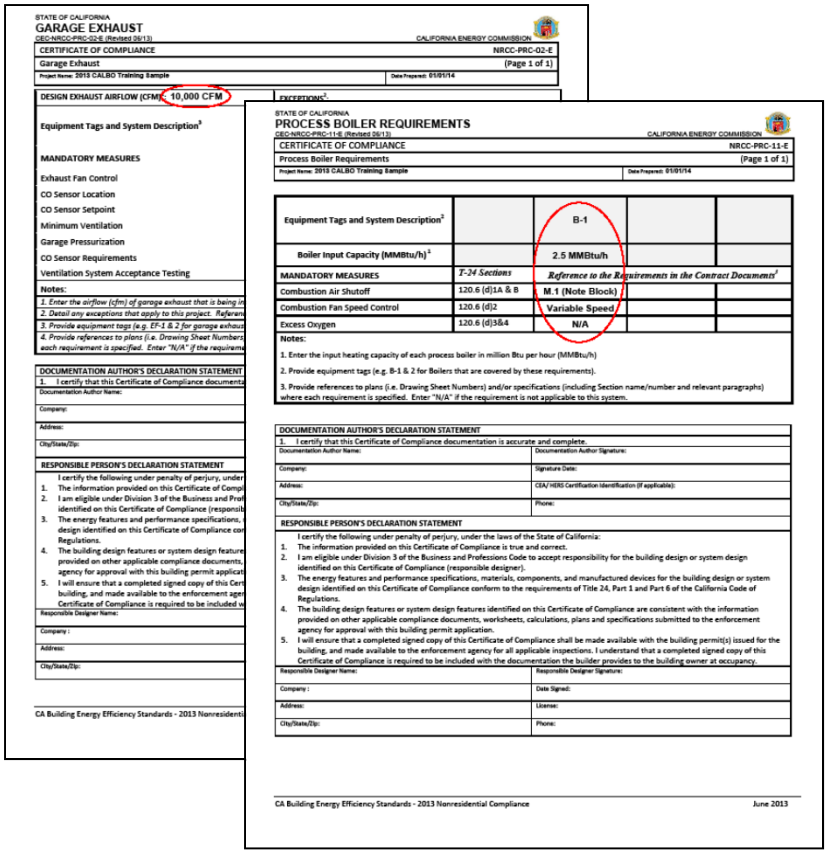
2013 – *§120.6*

- Refrigerated warehouse reqs. updated
  - Acceptance testing req.
- Covered processes added:
  - Commercial refrigeration
  - Enclosed parking garages
  - Process boilers
  - Compressed air systems
  - Commercial kitchens

Covered Processes *cont.*

- **Commercial refrigeration reqs. in §120.6(b)**
  - Applicable to retail food stores with CFA ≥ 8,000 ft^2 that have refrigeration
- **Enclosed parking garages reqs. in §120.6(c)**
  - Applicable if total design exhaust rate ≥ 10,000 CFM
  - Acceptance testing req. for ventilation
- **Process boiler reqs. in §120.6(d)**
  - Applicability based on boiler capacity (Btu/h)
- **Compressed air system reqs. in §120.6(e)**
  - Applicable to compressors with HP ≥ 25
  - Acceptance testing req. for compressor and controls
- **Commercial kitchen reqs. in §140.9(b)**
  - Applicable to Type I and Type II kitchen hoods with total exhaust airflow rate > 5,000 cfm (Acceptance testing req. for exhaust rate)

§120.6 and the Plans Examiner



STATE OF CALIFORNIA
GARAGE EXHAUST
CEC-NRCC-PRC-02-E (Revised 06/13) CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE NRCC-PRC-02-E
Garage Exhaust (Page 1 of 1)
Project Name: 2013 CALBO Training Sample Date Prepared: 01/01/14

DESIGN EXHAUST AIRFLOW (CFM): 10,000 CFM

Equipment Tags and System Description[3]

MANDATORY MEASURES

Exhaust Fan Control
CO Sensor Location
CO Sensor Setpoint
Minimum Ventilation
Garage Pressurization
CO Sensor Requirements
Ventilation System Acceptance Testing

Notes:
1. Enter the airflow (cfm) of garage exhaust that is being in
2. Detail any exceptions that apply to this project. Referen
3. Provide equipment tags (e.g. EF-1 & 2 for garage exhaus
4. Provide references to plans (i.e. Drawing Sheet Numbers
each requirement is specified. Enter "N/A" if the requirem

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT
1. I certify that this Certificate of Compliance documenta
Documentation Author Name:
Company:
Address:
City/State/Zip:

RESPONSIBLE PERSON'S DECLARATION STATEMENT
I certify the following under penalty of perjury, under
1. The information provided on this Certificate of Compl
2. I am eligible under Division 3 of the Business and Prof
identified on this Certificate of Compliance (responsib
3. The energy features and performance specifications,
design identified on this Certificate of Compliance cor
Regulations.
4. The building design features or system design feature
provided on other applicable compliance documents,
agency for approval with this building permit applicat
5. I will ensure that a completed signed copy of this Cert
building, and made available to the enforcement ager
Certificate of Compliance is required to be included w
Responsible Designer Name:
Company :
Address:
City/State/Zip:

CA Building Energy Efficiency Standards - 2013 Nonresident

STATE OF CALIFORNIA
PROCESS BOILER REQUIREMENTS
CEC-NRCC-PRC-11-E (Revised 06/13) CALIFORNIA ENERGY COMMISSION
CERTIFICATE OF COMPLIANCE NRCC-PRC-11-E
Process Boiler Requirements (Page 1 of 1)
Project Name: 2013 CALBO Training Sample Date Prepared: 01/01/14

Equipment Tags and System Description[2]		B-1		
Boiler Input Capacity (MMBtu/h)[1]		2.5 MMBtu/h		
MANDATORY MEASURES	*T-24 Sections*	*Reference to the Requirements in the Contract Documents*[3]		
Combustion Air Shutoff	120.6 (d)1A & B	M.1 (Note Block)		
Combustion Fan Speed Control	120.6 (d)2	Variable Speed		
Excess Oxygen	120.6 (d)3&4	N/A		

Notes:
1. Enter the input heating capacity of each process boiler in million Btu per hour (MMBtu/h)
2. Provide equipment tags (e.g. B-1 & 2 for Boilers that are covered by these requirements).
3. Provide references to plans (i.e. Drawing Sheet Numbers) and/or specifications (including Section name/number and relevant paragraphs) where each requirement is specified. Enter "N/A" if the requirement is not applicable to this system.

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT
1. I certify that this Certificate of Compliance documentation is accurate and complete.
Documentation Author Name: | Documentation Author Signature:
Company: | Signature Date:
Address: | CEA/HERS Certification Identification (If applicable):
City/State/Zip: | Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT
I certify the following under penalty of perjury, under the laws of the State of California:
1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.
Responsible Designer Name: | Responsible Designer Signature:
Company : | Date Signed:
Address: | License:
City/State/Zip: | Phone:

CA Building Energy Efficiency Standards - 2013 Nonresidential Compliance June 2013

- **Verify applicable Certificate of Compliance on plans**
  - NRCC-PRC-02 (Garages)
  - NRCC-PRC-03 (Comm. Kitchens)
  - NRCC-PRC-05 (Comm. Refrig.)
  - NRCC-PRC-10 (Comp. Air Sys.)
  - NRCC-PRC-11 (Boilers)
- **Verify required Acceptance Tests on NRCC-PRC-01 and respective forms above**

CERTIFICATE OF COMPLIANCE	NRCC-PRC-01-E
Process Compliance Forms & Worksheets	(Page 1 of 3)
Project Name:	Date Prepared:

PROCESS COMPLIANCE FORMS & WORKSHEETS (check box if worksheet is included)

For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, refer to the 2008 Nonresidential Manual Note: The Enforcement Agency may require all forms to be incorporated onto the building plans.

YES	NO	Form/Worksheet #	Title
☐	☐	PRC-01-E (1 of 2)	Covered Process Certificate of Compliance. Required on plans for all submittals with covered processes.
☐	☐	PRC-01-E (2 of 2)	Certificate of Compliance, Required Acceptance Tests (PRC-02-A to PRC-8-A). Required on plans for all submittals.
☐	☐	PRC-02-E	Compliance Form for Enclosed Parking Garage Exhaust Fans
☐	☐	PRC-03-E	Compliance Form for Commercial Kitchens
☐	☐	PRC-04-E	Compliance Form for Computer Rooms
☐	☐	PRC-05-E	Compliance Form for Commercial Refrigeration
☐	☐	PRC-06-E	Compliance Form for **ALL** Refrigerated Warehouses
☐	☐	PRC-07-E	Compliance Form for Refrigerated Warehouse ≥ 3,000 ft2
☐	☐	PRC-08-E	Compliance Form for Refrigerated Warehouse Where **Multiple** Spaces that (i) comprise a total of 3,000 square feet or more; and (ii) are collectively served by the same refrigeration system compressor(s) and condenser(s) (central systems).
☐	☐	PRC-09-E	Compliance Form for Laboratory Exhaust
☐	☐	PRC-10-E	Compliance Form for Compressed Air Systems
☐	☐	PRC-11-E	Compliance Form for Process Boilers

CERTIFICATE OF COMPLIANCE	NRCC-PRC-01-E
Required Acceptance Tests	(Page 3 of 3)
Project Name:	Date Prepared:

PROCESS ACCEPTANCE FORMS (check box for required forms)

Designer:
This form is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for process systems. The designer is required to check the applicable boxes for all acceptance tests that apply and list all equipment that requires an acceptance test. If all equipment of the same type requires a test, list the equipment description and the number of systems.

Installing Contractor:
The contractor who installed the equipment is responsible to either conduct the acceptance test them self or have a qualified entity run the test for them. If more than one person has responsibility for the acceptance testing, each person shall sign and submit the Certificate of Acceptance applicable to the portion of the construction or installation for which they are responsible.

Enforcement Agency:
Plancheck – The NRCC-PRC-01-E form is not considered a completed form and is not to be accepted by the building department unless the correct boxes are checked.
Inspector - Before occupancy permit is granted all newly installed process systems must be tested to ensure proper operations.

Test Description		**PRC-01A**	**PRC-02A**	**PRC-03A**	**PRC-04A**	**PRC-05A**	**PRC-06A**	**PRC-07A**	**PRC-08A**
Equipment Requiring Testing or Verification	# of units	Compressed Air Systems	Kitchen Exhaust	Garage Exhaust	RHW Evap Fan Motor Controls	RHW Evap Condenser Controls	RHW Air-Cooled Condenser Controls	RHW Variable Speed Compressors	RHW Elect. Underslab Heating
		☐	☐	☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐	☐	☐
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STATE OF CALIFORNIA

GARAGE EXHAUST

CEC-NRCC-PRC-02-E (Revised 06/13) CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE	NRCC-PRC-02-E
Garage Exhaust	(Page 1 of 1)
Project Name: **2013 CALBO Training Sample**	Date Prepared: **01/01/14**

DESIGN EXHAUST AIRFLOW (CFM)[1]: 10,000 CFM	**EXCEPTIONS[2]:**	
Equipment Tags and System Description[3]		
MANDATORY MEASURES	***T-24 Sections***	***Reference to the Requirements in the Contract Documents[4]***
Exhaust Fan Control	120.6 (c)1 & 2	**M.2 (Fan Schedule)**
CO Sensor Location	120.6 (c)3	**M.3 (CO Note Block)**
CO Sensor Setpoint	120.6 (c)4	**M.3 (CO Note Block)**
Minimum Ventilation	120.6 (c)5	**300 cfm**
Garage Pressurization	120.6 (c)6	**Negative**
CO Sensor Requirements	120.6 (c)6	**M.3 (CO Note Block)**
Ventilation System Acceptance Testing	120.6 (c)8	**NRCA-PRC-03 req.**

Notes:

1. Enter the airflow (cfm) of garage exhaust that is being installed under this project.

2. Detail any exceptions that apply to this project. Reference appropriate exception number from §120.6 where applicable.

3. Provide equipment tags (e.g. EF-1 & 2 for garage exhaust fans that are part of this project)

4. Provide references to plans (i.e. Drawing Sheet Numbers) and/or specifications (including Section name/number and relevant paragraphs) where each requirement is specified. Enter "N/A" if the requirement is not applicable to this system.

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

1. I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name:	Documentation Author Signature:
Company:	Signature Date:
Address:	CEA/ HERS Certification Identification (if applicable):
City/State/Zip:	Phone:

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer).
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name:	Responsible Designer Signature:
Company :	Date Signed:
Address:	License:
City/State/Zip:	Phone:

§120.6 and the Field Inspector

- **Verify at Final applicable Certificate of Acceptance**
  - Refer to NRCC-PRC-01
    - NRCA-PRC-01 (Comp. Air Systems)
    - NRCA-PRC-02 (Comm. Kitchens)
    - NRCA-PRC-03 (Garages)
    - NRCA-PRC-04 through -08 (Refrigerated Warehouses)

ENCLOSED PARKING GARAGE EXHAUST SYSTEM ACCEPTANCE

CERTIFICATE OF ACCEPTANCE		NRCA-PRC-03-F
Enclosed Parking Garage Exhaust System Acceptance		(Page 1 of 2)
Project Name: **2013 CALBO Training Sample**	Enforcement Agency: **Local Jurisdiction**	Permit Number: **010113**
Project Address: **2013 CALBO Drive**	City: **Sacramento**	Zip Code: **95814**

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.	Enforcement Agency Use: Checked by/Date

Intent: Verify that airside economizers function properly

Construction Inspection

1. Supporting documentation needed to perform test includes:
   a. 2013 Building Energy Efficiency Standards Nonresidential Compliance Manual *(NA7.5.4 Air Economizer Controls Acceptance At-A-Glance).*
   b. 2013 Building Energy Efficiency Standards.
2. Instrumentation to perform test includes:
   a. Space differential pressure sensor
      Calibration Date: **1/1/14** (must be within last year)
3. Installation: (**all** of the following boxes should be checked)
   ☒ Each CO sensor has a valid factory calibration certificate (+/-5%)
   ☒ CO sensors are located in areas of high CO concentration per 120.6(c)
   ☒ CO control setpoint is at or below 25ppm for all sensors per 120.6(c)

A. Functional Testing	**Results**
Step 1: During a time of low activity (e.g. after hours or mid-morning or mid-afternoon) verify the following:	
a. All sensors active and reading a setpoint of <25ppm	(Y) / N
b. Exhaust fans are running at minimum speed.	(Y) / N
c. Exhaust fans are drawing <30 rated power.	(Y) / N / NA
Step 2: Apply CO span gas with a concentration of 30 ppm, and a concentration accuracy of +/- 2%, one by one to 50% of the sensors but no more than 10 sensors per garage and to at least one sensor per proximity zone. For each sensor tested observe	
a. All sensors active and reading a setpoint of between 25 and 35ppm	(Y) / N
b. Exhaust fans are running at maximum speed.	(Y) / N
c. Exhaust fans go back to minimum speed when span gas is removed.	(Y) / N / NA
Step 3: Temporarily override the programmed sensor calibration/replacement period to 5 minutes.	
a. Wait 5 minutes and observe that fans ramp to full speed and an EMCS alarm is set	(Y) / N
Step 4: Temporarily place the system in unoccupied mode and override the programmed unoccupied sensor alarm differential from 30% for 4 hours to 1% for 5 minutes.	
a. Wait 5 minutes and observe that fans ramp to full speed and an alarm is received by the facility operators. Restore programming.	(Y) / N
Step 5: Temporarily override the programmed occupied sensor proximity zone alarm differential from 30% for 4 hours to 1% for 5 minutes.	
a. Wait 5 minutes and observe that fans ramp to full speed and an alarm is received by the facility operators. Restore programming.	(Y) / N

B. Testing Results	**PASS**	**FAIL**
Steps 1-5: All responses were yes	☒	

ENCLOSED PARKING GARAGE EXHAUST SYSTEM ACCEPTANCE

CERTIFICATE OF ACCEPTANCE		NRCA-PRC-03-F
Enclosed Parking Garage Exhaust System Acceptance		(Page 2 of 2)
Project Name: **2013 CALBO Training Sample**	Enforcement Agency: **Local Jurisdiction**	Permit Number: **010113**
Project Address: **2013 CALBO Drive**	City: **Sacramento**	Zip Code: **95814**

C. Evaluation :

☒ PASS: All **Construction Inspection** responses are complete and all **Testing Results** responses are "Pass"

Notes:

§120.6 and the Field Inspector *cont.*

- **NRCA forms req. for covered processes (refrigerated warehouses)**
  - NRCA-PRC-04 (evaporator fan motor controls)
  - NRCA-PRC-05 (evaporative condenser controls)
  - NRCA-PRC-06 (air-cooled condenser controls)
  - NRCA-PRC-07 (variable speed compressor)
  - NRCA-PRC-08 (electric resistance underslab heating)

** Acceptance testing for covered processes do not req. a CMATT*

In Summary

- Acceptance testing is required for HVAC, indoor/outdoor lighting, site-built fenestration, and covered processes
- When applicable, acceptance tests must be specified on respective NRCC form at permit
- Field technician must report results of acceptance testing on respective NRCA form at final inspection
- Field technicians performing testing for indoor/outdoor lighting must be a CLCATT
- Field technicians performing testing for HVAC will need to be CMATT when thresholds are satisfied

Nonresidential Data Registry status update

- **Effective January 1, 2015 – all nonresidential forms must be registered (§10-103)**
  - Contingent upon approval of a nonresidential data registry
- **To date, no such registry has been approved**
  - This means that registration is not required at this time
- **No application has been submitted as of yet to review**

For more information

- **2013 Standards Website at:**
  - http://www.energy.ca.gov/title24/2013standards/index.html
- **Training**
  - http://www.energy.ca.gov/title24/training/
- **List servers and Newsletter (*Blueprint*)**
  - http://www.energy.ca.gov/efficiency/listservers.html
- **Ace Web Toolkit**
  - http://www.energycodeace.com/content/home/